



# Fermilab

## ENGINEERING & FABRICATION DEPARTMENT

### CONTROLLING EXPOSURES TO LEAD AND CHROMIUM IN INDUSTRIAL BUILDING 2 & 2A

**Written by:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
Richard Ruthe, TD SSO

**Reviewed by:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
John Carson, Deputy Department Head

**Approved:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
*Original signed by V. Yarba 9/4/01*

## 1.0 Introduction

The purpose of this procedure is to control potential personnel exposures to lead and chromium associated with various activities in Industrial Buildings 2 (IB-2) and 2A (IB-2A). The exposures can be created by work activities on magnets or other items with surface paint that contains lead and/or chromium. Personnel groups potentially exposed to lead and chromium include grit blasters and IB-2 personnel reworking older magnets. The purpose of this procedure is to control the hazardous exposures to personnel, and to comply with the requirements of FESHM 5052.3 (*Special Toxic Hazards: Lead Containing Materials*).

## 2.0 Procedures

### 2.1 Exposure Assessment

#### 2.1.1 Testing of Materials

The TD ES&H Group may determine that, upon review of sampling results from same or similar materials, testing is not required. If there is no prior knowledge on which to base a judgment, test the paint of materials suspected of having painted surfaces containing lead and/or chromium content before any activity on them is initiated. Either IB-2 personnel or TD ES&H Group staff may collect a bulk sample of the surface paint. The TD ES&H Group will submit the sample to an AIHA accredited analytical lab.

### 2.1.2 Wipe Samples

The TD ES&H Group will collect wipe samples from surfaces outside of the grit blast booth and have them analyzed to ensure that: (1) grit contaminated with lead and chromium is not migrating from the booth, and (2) to ensure that other activities in IB-2 are not generating surface contamination. At minimum, one set of samples is initially required during each month the grit blast booth is operated to remove paint that contains lead and/or chromium. Floor areas and surfaces that could be disturbed by personnel activity, both in the compressor room behind the grit blast booth and in the high bay area of IB-2, must be sampled. A surface is considered clean if the surface concentration of lead is less than  $0.05 \text{ mg/dm}^2$ . Although not addressed by any lab policy, the same surface concentration guidelines will be used to determine a clean surface for chromium. Wipe samples may be collected on a quarterly basis upon three consecutive months of contamination-free surfaces.

### 2.1.3 Personal Exposures

TD ES&H will conduct personal air monitoring representative of the grit blaster's full shift exposure to lead and chromium each quarter the grit blast booth is operated to remove lead and/or chromium containing paint. Additionally, IB-2 personnel must notify TD ES&H when there is work activity on a magnet or other item that is known to have surface paint that contains lead and/or chromium. TD ES&H will then make a determination whether personal air monitoring will be conducted during the activity on that item.

## 2.2 Personal Protective Equipment

### 2.2.1 Grit Blasters

The grit blast helmet/air line respirator provides a protection factor of 1000; therefore the grit blaster is well protected from the expected lead and chromium airborne exposures. The grit blaster will also wear disposable coveralls and leather boots without laces. Before opening the door and exiting the grit blast booth, the grit blaster must blow off the coveralls and. Upon exiting the booth, the grit blaster must immediately remove the disposable coveralls and place them in a hazardous waste bag.

### 2.2.2 Other IB-2/2A Personnel

Depending on the activity, employees working on magnets or other items with lead and/or chromium containing paint may be required to wear disposable coveralls and respiratory protection (a tight fitting respirator with a N100 or P100 filter). For those activities known not to produce an overexposure, but for which an employee may desire respiratory protection for nuisance dust, a filtering

facepiece (3M 8233 N100) will be provided. IB-2 personnel must contact TD ES&H before starting any new work activity on an item known to have surface paint that contains lead and/or chromium so that the appropriate level of PPE can be determined.

### 2.3 Hygiene

Washroom facilities are provided in IB-2, and shower facilities are available in IB-1 and ICB. Personnel must thoroughly wash their hands and face after grit blasting or working on items with surface paint that contains lead and/or chromium. The TD ES&H Group will determine those instances where personnel will be required to use the shower facilities.

### 2.4 Housekeeping and Signs

Take every precaution to prevent potentially contaminated grit from migrating from the booth. All surfaces of grit blasted items in the booth should be thoroughly blown off with compressed air in the booth before opening the door and removing the item from the booth. As much grit as practical on the floor of the booth should be blown towards the back of the booth, with extra care taken at the overhead door area. Allow the dust to settle before opening the overhead door. Use either the HEPA filter-equipped vacuum or the IB-2 central vacuum system to remove grit and dust from surfaces outside of the booth.

The overhead door and the rear access door to the grit blast booth will be posted with signs warning of the lead hazard and announcing the grit blast booth to be restricted to authorized personnel only.

### 2.5 Medical Surveillance

Each employee operating the grit blaster will be enrolled in a medical surveillance program designed by the Fermilab Medical Department. Before or shortly after an employee's first day of operating the grit blaster to remove lead and/or chromium containing paint, an initial blood sample will be collected by the Medical Department and analyzed for blood lead and zinc protoporphyrin (ZPP). Periodic blood samples will be collected from each grit blaster based on a schedule established by the Medical Department.

### 2.6 Training

Each employee that works as a grit blaster is required to attend Lead Worker Training (#FN00292). All other employees in IB-2 that work on magnets or items that contain lead in the paint above detectable levels are required to attend Lead Handling Training (#FN00123). At the supervisor's discretion, an employee may attend Lead Worker Training rather than Lead Handling Training. Personnel that

are potentially or actually exposed to airborne lead at or above 30 µg/M<sup>3</sup> are required to attend Lead Worker Training.

## 2.7 Waste

Collect the grit waste in 30 or 55 gallon drums. TD ES&H will collect samples and have them analyzed for lead and chromium by TCLP. The TD ES&H Group will determine the appropriate disposal method upon receipt of the testing results. The TD ES&H Group will also determine the proper disposal method for any paint chips that are removed and collected from magnets or other items known to contain lead and/or chromium.